

## **IMPORTANT**

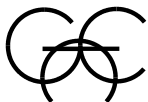
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## ENGINEERING ASSOCIATES, INC.

GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION MATERIALS CONSULTANTS

- Atlanta, GA
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January 7, 2004

Edward E. Gillen Co.  
218 West Becher Street  
Milwaukee, Wisconsin 53207

Attention: Mr. Gary Jackson

Subject: Lake Michigan Bluff Stability Analysis  
December 2004 Update  
Bender Park  
Oakwood Road  
Oak Creek, Wisconsin  
Project No. 1G-0309022

Dear Mr. Jackson:

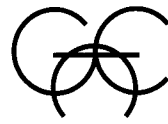
Continued water level monitoring in the piezometers has been performed since the previous report dated September 27, 2004. The majority of the wick drains in the southern study area and one wick drain in the northern study area are continuing to discharge water. No visually apparent massive land slippage has occurred, based on vegetation present since at least Spring 2004. The protective covers on two of the four previously vandalized water level monitoring piezometers were replaced. The piezometer function has not been damaged. A table of all recordings of the water levels in the monitoring piezometers is attached.

### **Summary of Monitoring**

Water levels recorded in the north study area monitoring piezometers have decreased in elevation by 5± to 6± feet in comparison to the levels recorded prior to installation. Water levels recorded in the south study area monitoring piezometers have decreased in elevation by 14± to 22± feet in comparison to the levels recorded prior to installation. The water level decrease rate has slowed. The water levels measured by piezometers PZ 1 and PZ1A are about 2± to 3± feet above the sensors.

### **Conclusions**

The slower rate of water level decrease is considered due to several factors. The water level hydraulic head on the wick drains has decreased by way of water drainage through the wicks. Also precipitation amounts since wick installation may have had an effect on the rate. Continued water level monitoring will enable a study on the effects of precipitation



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Lake Michigan Bluff Stability Analysis  
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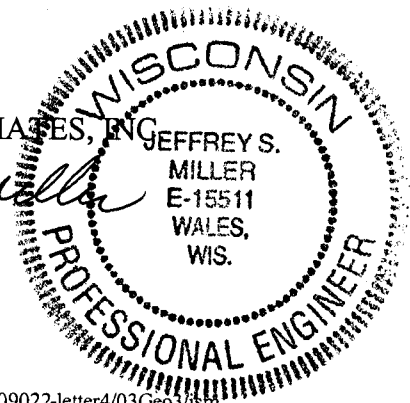
**Closure**

We appreciate the opportunity to have been of service on this project. If there are any questions or if we may be of further service, please call.

Very truly yours,

GILES ENGINEERING ASSOCIATES, INC.

Jeffrey Scott Miller, P.E.  
Sr. Project Manager



Enclosure: Table 1 Piezometer Record  
Distribution: Edward E. Gillen Co.  
Attention: Mr. Gary Jackson (3)

1g0309022-letter4/03Geo3/jsm

TABLE 1

Piezometer Record

Piezometer Location	Ground surface Elevation	Piezometer Elevation
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PZ 1	697	617
PZ 1A	698	638
PZ 2	696	621
PZ 2A	698	648
STS 1	695	
STS 2	695	

Pressure (psi) or Depth (feet)

10-2-03	11-21-03	12-24-03	5-18-04	5-24-04	7-8-04	8-4-04	8-18-04	9-23-04
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8.01	7.94	8.05	10.12	10.30	10.75	5.45	4.14	2.55
1.00	3.84	4.15	6.10	6.40	7.05	4.45	2.14	0.92
	14.96	14.79	16.80	17.10	17.30	17.60	17.45	16.94
	12.37	13.37	15.60	15.90	15.56	15.25	15.14	14.16
49.00		48.20	46.90	46.70	45.40			46.00
8.50		12.90	0.50	1.00	2.10			6.00

Piezometer Location
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Water Level Elevation

10-2-03	11-21-03	12-24-03	5-18-04	5-24-04	7-8-04	8-4-04	8-18-04	9-23-04
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PZ 1	635	635	636	640	641	642	630	627	623
PZ 1A	640	647	648	652	653	654	648	643	640
PZ 2		656	655	660	660	661	662	661	660
PZ 2A		677	679	684	685	684	683	683	681
STS 1	646		647	648	648	650			649
STS 2	687		682	695	694	693			689

Notes:

5-24-04 after Spring heavy rainfalls

7-8-04 one week prior to wick installation

8-4-04 wick installation completed

9-10-4 additional wick installation completed